

WHAT IS CLAIMED IS:

1. A two-component foam system for producing foams for construction purposes, comprising a polyol component (A) which contains at least one polyol, water, and an aqueous polymer dispersion; and a polyisocyanate component (B) which contains at least one polyisocyanate, the quantitative ratio of the at least one polyol to the at least one polyisocyanate being matched so that, when the polyol component (A) is mixed as specified with the polyisocyanate component (B), a molar ratio of isocyanate groups of the polyisocyanate to OH groups of the polyol (NCO : OH ratio) of 1 : 5 to 10 : 1 is obtained.

2. The two-component foam system of claim 1, wherein the polyol component (A) contains a catalyst for reaction of the polyol with the polyisocyanate, and the molar ratio of isocyanate groups of the polyisocyanate to OH groups of the polyol (NCO : OH ratio) is 1 : 2 to 2 : 4.

3. The two-component foam system of claim 1, wherein the aqueous polymer dispersion contains, as polymer, at least one representative of the group consisting of polyurethanes, polyvinyl acetates, polyvinyl ethers,

polyvinyl propionates, polystyrenes, natural or synthetic rubbers, poly((meth)acrylates) and homopolymers and copolymers based on at least one of (meth)acrylates, acrylonitrile, vinyl esters, vinyl ethers, vinyl chloride, and styrene.

4. The two-component foam system of claim 3, wherein the aqueous polymer dispersion contains at least one of poly(alkyl methacrylate), poly(alkyl acrylate), poly(aryl methacrylate), poly(aryl acrylate), and copolymers thereof with at least one of n-butyl acrylate and styrene, as the polymer.

5. The two-component foam system of claim 1, wherein the polyol component (A) contains 20 to 300 parts by weight of the polymer or polymers of the aqueous polymer dispersion per 100 parts by weight of the at least one polyol of the polyol component (A).

6. The two-component foam system of claim 5, wherein the polyol component (A) contains 50 to 150 parts by weight of the polymer or polymers of the aqueous polymer dispersion per 100 parts by weight of the at least one polyol of the polyol component (A).

7. The two-component foam system of claim 1, wherein the aqueous polymer dispersion has a water content of 5 to 80% by weight.

8. The two-component foam system of claim 7, wherein the aqueous polymer dispersion has the water content of 20 to 60% by weight.

9. The two-component foam system of claim 1, wherein the aqueous polymer dispersion is contained in such an amount in the polyol component (A) that the water content of the polyol component (A) ranges from 6 to 100 parts by weight per 100 parts by weight of the at least one polyol of the polyol component (A).

10. The two-component foam system of claim 9, wherein the water content of the polyol component (A) ranges from 20 to 60 parts by weight per 100 parts by weight of the at least one polyol of the polyol component (A).

11. The two-component foam system of claim 1, wherein the polyol component (A) contains, as polyol, at least one representative of the linear or branched, aliphatic, aromatic and araliphatic, monomeric or polymeric polyols, polyester polyols, polyether polyols, fatty acid polyester polyols, amino polyols and halogenated polyols.

12. The two-component foam system of claim 11, wherein the polyol has a molecular weight ranging from 200 to 10,000, and 2 to 6 hydroxyl groups, and is selected from the group consisting of polyethylene glycol, polypropylene glycol, and polybutylene glycol with an average molecular weight of 200 to 3,000, at least one of the polyester polyols and polyether polyols with a functionality of 1.5 to 5 and an OH number of 100 to 700, and wherein the polyisocyanate component (B) contains a polyisocyanate with a functionality of at least 2 and an NCO content of 20 to 40%.

13. The two-component foam system of claim 12, wherein polyethylene glycol, polypropylene glycol, and polybutylene glycol has each an average molecular weight of 300 to 600.

14. The two-component foam system of claim 1, wherein the polyol component (A) contains at least one cell stabilizer in an amount of 0.01 to 5% by weight.

15. The two-component foam system of claim 14, wherein the polyol component (A) contains at least one cell stabilizer in an amount of 0.1 to 1.5% by weight.

16. The two-component foam system of claim 14, wherein the polyol component (A) contains a cell stabilizer selected from the group consisting of polysiloxanes, polyether-modified siloxanes, siloxane-oxyalkylene copolymers, silicones, nonionic emulsifiers of average polarity, and silicone glycol copolymers, polydimethylsiloxane, polyoxyalkylene glycol-alkylsilane copolymers, alkoxyated fatty acids.

17. The two component foam system of claim 16, wherein fatty acids are selected from a group consisting of ethoxylated or propoxylated fatty acids with 14 carbon atoms in the acid group, ethoxylated (C₁ to C₁₈) alkyl phenols, and ethoxylated castor oil.

18. The two-component foam system of claim 1, wherein the polyol component (A) contains at least one intumescent material.

19. The two-component foam system of claim 18, wherein at least one of the expanded graphite and vermiculite is contained as intumescent material.

20. The two-component foam system of claim 1, wherein the polyol component (A) contains at least one of an aromatic and aliphatic,

secondary or tertiary amine, an organometallic compound of a metal selected from the group containing Zn, Sn, Mn, Mg, Bi, Sb, Pb and Ca.

21. The two-component foam system of claim 20, wherein as organometallic compound of the metal selected from the group containing Zn, Sn, Mn, Mg, Bi, Sb, Ca, octoate, naphthenate or acetylacetonate of these metals is used as catalysts for reaction of the polyol with the polyisocyanate.

22. The two-component foam system of claim 1, wherein the polyisocyanate component (B) contains a polyisocyanate selected from the group consisting of aliphatic, cycloaliphatic, araliphatic, aromatic and heterocyclic polyisocyanates, especially 4,4'-methylene diphenylisocyanate, toluylene diisocyanate, isopropylidene diisocyanate, hexamethylene diisocyanate, and a prepolymer or an oligomer of these diisocyanates.

23. The two-component foam system of claim 1, wherein the polyol component (A) and the polyisocyanate component (B) contains a blowing agent based on a compressed or liquefied gas, selected from the group containing air, nitrogen, carbon dioxide, nitrous oxide, a fluorinated hydrocarbon, dimethyl ether, butane, and propane.

24. The two-component foam system of claim 23, wherein the fluorinated hydrocarbon is selected from the group containing 1,1,1,2-tetrafluoroethane and 1,1,1,2,3,3,3-hexafluoropentane.

25. The two-component foam system of claim 1, wherein at least one of the polyol component (A) and the polyisocyanate component (B) contains an organic or inorganic flame retardant.

26. The two-component foam system of claim 25, wherein the organic or inorganic flame retardant is contained in an amount of 0.1 to 20% by weight.

27. The two-component foam system of claim 26, wherein the organic or inorganic flame retardant is contained in an amount of 0.5 to 5% by weight

28. The two-component foam system of claim 25, wherein the flame retardant is selected from a group consisting of red phosphorus, a phosphorus compound, and antimony oxide.

29. The two-component foam system of claim 28, wherein the phosphorus compound is selected from a group containing triethyl phosphate,

triphenyl phosphate, a halogenated phosphat ester, trichloroethyl phosphate, tris (2-chloroisopropyl) phosphate, tris (2 chloroethyl) phosphate, ammonium polyphosphate; and the metal hydroxide is selected from a group containing aluminum hydroxide and magnesium hydroxide.

30. The two-component foam system of claim 1, wherein the polyol component (A) contains an agent for accelerating the coagulation of the polymer dispersion.

31. The two-component foam system of claim 30, wherein the polyol component (A) contains one of a finely divided solid, a salt, an oxide of a multivalent, metal and an organic acid as the agent for accelerating the coagulation.

32. The two-component foam system of claim 31, wherein a multivalent metal is selected from a group consisting of alkaline earth elements, zinc, aluminum, and iron.

33. The two-component foam system of claim 31, wherein the polyol component (A) contains at least one of finely divided inorganic filler and organic filler as the agent for accelerating the coagulation.

34. The two-component foam system of claim 31, wherein the polyol component (A) contains at least one finely divided inorganic filler selected from the group consisting of metal oxides, borates, carbonates, silicates, kaolin, glass powder, iron oxide, titanium oxides, silica, inorganic foams, and hollow spheres of silicate material or glass.

35. The two-component foam system of claim 34, wherein chalk is used as a carbonate, and wherein the foam is selected from the group consisting of foamed expanded, clay, foamed perlite, and foamed vermiculite.

36. The two-component foam system of claim 31, wherein the polyol component (A) contains at least one of particulate or fibrous vegetable and animal polymers as the agent for accelerating the coagulation.

37. The two-component foam system of claim 36, wherein the vegetable polymers are based on potatoes, corn, rice, grain, wood, cork, paper, leather, cellulose, hemp, cotton, and the animal polymer is based on wool.

38. The two-component foam system of claim 31, wherein the polyol component (A) contains calcium nitrate, zinc nitrate, zinc oxide, aluminum sulfate, aluminum chloride, iron sulfate, iron chloride, formic acid,

acetic acid, polyacrylamide, and ammonium polyphosphate as the agent for accelerating the coagulation.

39. The two-component foam system of claims 30, wherein the polyol component (A) further contains a coagulating aid.

40. The two-component foam system of claim 39, wherein one of ester alcohol and glycol is used as the coagulation aid.

41. The two-component foam system of claim 39, wherein 2,2,4 - trimethyl - 1,3 - dihydroxypentane monoisobutyrate is used as the coagulation aid.

42. The two-component foam system claim 1, wherein at least one of the polyol component (A) and the polyisocyanate component (B) contains at least one of a thixotropic agent and a diluent or solvent.

43. The two-component foam system of claim 42, wherein at least one of silica, phyllosilicate, an activated bentonite, sepionite or attapulgite, polyethylene wax, and cellulose derivatives, is contained as the thixotropic agent.

44. The two-component foam system of claim 42, wherein at least one of a synthetic magnesium phyllosilicate and hydroxyethylcellulose is used as the thixotropic agent.

45. The two-component foam system of claim 42, wherein an aliphatic alcohol is contained as diluent or solvent.

46. The two-component foam system of claim 42, wherein one of butanol and dipropylene glycol is used as diluent or solvent.

47. The two-component foam system of claim 1, wherein at least one of the polyol component (A) and the polyisocyanate component (B) additionally contains at least one of inorganic filler and organic filler.

48. The two-component foam system of claim 47, wherein at least one of metal oxide, a borate, a carbonate, a silicate, kaolin, glass powder, iron oxide, titanium oxide, silica, an inorganic foam, and hollow sphere of a silicate material or glass is contained as the inorganic filler.

49. The two-component foam system of claim 48, wherein an inorganic foam is selected from the group consisting of foamed expanded clay, foamed perlite, and foamed vermiculite, and a chalk is used as carbonate.

50. The two-component foam system of claim 47, wherein at least one of particulate vegetable polymer, fibrous vegetable polymer, and animal polymer, is contained as the organic filler.

51. The two-component foam system of claim 50, wherein the particulate vegetable polymer and the fibrous vegetable polymer are based on potatoes, corn, rice, grain, wood, cork, paper, cellulose, hemp, cotton, and starch, and the animal polymer is based on leather and wool.

52. The two-component foam system of claim 1, wherein at least one of the polyol component (A) and the polyisocyanate component (B) additionally contains at least one of known auxiliary materials, additives, stabilizers, plasticizers, catalysts, solvents, pigments, and dyes.

53. The two-component foam system of claim 52, wherein at least one of ester, based phthalic acid, adipic acid, sebacic acid, phosphoric acid, citric acid, and a fatty acid is contained as the plasticizer.